TECHNICAL REVIEW DOCUMENT
for
MODIFICATION TO OPERATING PERMIT 95OPBA029

Colorado Interstate Gas Company – Flank Compressor Station
Baca County
Source ID 0090001

Prepared by Jacqueline Joyce
September 2008

I. Purpose:

This document establishes the decisions made regarding the requested modification to the Operating Permit for Colorado Interstate Gas Company's Flank Compressor Station. This document provides information describing the type of modification and the changes made to the permit as requested by the source and the changes made due to the Division's analysis. This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the request for modification submitted to the Division on July 1, 2008, additional information submitted on September 16, 2008, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Permit Modification Request/Modification Type

The Operating Permit for the Flank Compressor Station was renewed on January 1, 2006. The source requested that the permit be revised to modify the language in the permit specifying when GLYCalc runs are triggered. The current language requires that a GLYCalc run be conducted if certain monitored parameters exceed a given threshold level, unless the unit is operated for less than 10 days in the month. The July 1, 2008 modification requests that this 10-day requirement be revised to 240 hours (10 days times 24 hours per day). In addition the source requested that the comparison criteria for the glycol circulation rate for the east and west dehydrators (Units S006 and S007) be increased from 1.5 gpm to 1.6 gpm.

In the July 1, 2008 modification request, the source submitted a GLYCalc run to support

the change to the glycol circulation rate for the east and west dehydrators. This evaluation indicated that no increase in permitted emissions was necessary for this change. However, after further review by the Division and the source, the source submitted a revised GLYCalc run and APEN on September 16, 2008, requesting a slight increase in permitted VOC emissions. The source has requested VOC emissions of 11.4 tons/yr for each unit. The permitted emission rate for each unit in the current permit is 10.2 tons/yr of VOC.

Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications "are not otherwise required by the Division to be processed as a significant modification" (Colorado Regulation No. 3, Part C, Section X.A.6).

The Division requires that "any change that causes a significant increase in emissions" be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.A.7.(a)). The increase in permitted (potential) emissions associated with this modification is 2.4 tons/yr of VOC, which is below the PSD significance levels of 40 tons/yr. Therefore, the Division agrees that this modification qualifies as a minor modification.

The Division requires that "every significant change in existing monitoring permit terms or conditions" and "every relaxation of reporting or record keeping permit terms or conditions" be processed as a significant modification (Colorado Regulation No. 3, Part C, Sections I.A.7.f and g). The source has requested that the language in the permit specifying when a GLYCalc run is triggered be revised from 10 days to 240 hours. Since 240 hours is equivalent to 10 days, the Division considers that revising the language to specify hours, rather than days is not a significant change in monitoring or a relaxation in reporting or recordkeeping.

The potential to emit (PTE) for this facility after the modification is shown in the below table:

Emission Unit	Potential to Emit (tons/yr)			
	NO_X	CO	VOC	HAPS
E001	15.9	29.5	6.4	See Table 2 on Page 7
E002 – E004	149.4	149.4	8.5	
E005	21.7	56.5	13	
East Dehy (S006)			11.4	
West Dehy (S007)			11.4	
Central Dehy (S008)			37.9	
Field Dehy (S009)			38	
Fugitive VOCs			0.20	
Total	187	235.4	126.8	55.97

The criteria pollutant PTE for the engines and dehydrators is based on permitted and/or requested emissions. The PTE for fugitive VOCs is based on the information provided

in March 22, 2007 modification request (this information demonstrated that fugitive VOC emissions from equipment leaks were below APEN de minimis levels, hence the previously issued construction permit was canceled and fugitive VOC emissions from equipment leaks are now included in the insignificant activity list).

The breakdown of HAP emissions by emission unit and individual HAP is provided on Table 2 (page 7) of this document. As indicated in the table footnotes, the HAP PTE was determined as follows: for the glycol dehydrators it is based on the GLYCalc run submitted to set permitted emissions; for fugitive VOC emissions it is based on the information provided in 2007; and for the engines it is based on design rate, permitted annual hours of operation (or 8760 hrs/yr) and the most conservative emission factor from AP-42 or HAPCalc 2.0.

Note that the HAP breakdown shown on Table 2 (page 7) represents potential HAPS based on traditional PTE methods (i.e. permit limits or design rate multiplied by 8760 hrs/yr). The Natural Gas Transmission and Storage (NGTS) Facilities and Oil and Natural Gas Production (ONGP) Facilities MACT (40 CFR Part 63 Subparts HHH and HH), allow for emissions from glycol dehydrators to be based on the maximum natural gas throughput rate, rather than the design rate. This analysis is shown on Table 1 (page 6). It should be noted that although the source calculated the maximum natural gas throughput rate (and subsequent hours of operation) as provided for in 40 CFR Part 63 Subpart HHH § 63.1270(a) for dehydrators S006, S007 and S008, the source used permitted hours of operation in the actual MACT analysis. Although permitted hours of operation were used, the HAP analysis was based on an actual gas analysis conducted at the time the MACT analysis was conducted. The benzene, toluene, ethyl benzene and xylene (BTEX) composition used in the MACT analysis was lower than the BTEX composition used to set the VOC emission limits in the permit, therefore, HAP emissions predicted by the MACT analysis (table on page 6) are lower for these units than the HAP emissions predicted by the GLYCalc runs used to set the permit limits (table on page 6). Note that the NGTS MACT specifies that the source use maximum values for other parameters over the same period for which the maximum throughput is determined and that those parameters shall be based on an annual average or the highest single value (§ 63.1270(a)(4)). As indicated in the table on page 7, increasing the glycol circulation rate for the east and west dehydrators (units S006 and S007) do not make the facility a major source for HAPS under the NGTS and ONGP MACT provisions. Therefore, this modification does not result in any changes in MACT applicability as discussed in the technical review document for the renewal permit.

III. Modeling

This modification results in an increase in permitted VOC emissions of 2.4 tons/yr. Although VOC is a precursor for ozone, in general accurate and cost effective methods for modeling ozone impacts from stationary sources are not available. Therefore, individual source ozone modeling is not routinely requested for construction permits.

IV. Discussion of Modifications Made

Source Requested Modifications

The Division addressed the source's requested modifications as follows:

Section II, Conditions 4.1.4, 5.1.4 and 6.1.4

The source requested that the phrase "ten (10) days" in these conditions be changed to "240 hours". The changes were made as requested.

Section II, Condition 5.1.4

The source requested that the word "temperature" be inserted after "inlet gas" in the first sentence in this condition. The change will be made as requested.

Section II.4 – East and West Glycol Dehydrators (Units S006 and S007)

In their initial request to modify the permit, the source requested that the glycol circulation rate by revised to 1.6 gpm in the comparison criteria table in Condition 4.1 and the GLYCalc run associated with this revision indicated that no increase in emissions was necessary. However, after further review, on September 16, 2008, the source submitted a revised GLYCalc run and an APEN requesting that permitted emissions for these units be increased to 11.4 tpy. The Division revised the permit to reflect the higher glycol circulation rate in the comparison criteria table and increase permitted VOC emissions as requested.

Other Modifications

In addition to the requested modifications made by the source, the Division used this opportunity to include changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this modification.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments on other permits, to the Flank Compressor Station Operating Permit with the source's requested modifications. These changes are as follows:

Section I – General Activities and Summary

- Minor language changes were made to Condition 3 (PSD) to be more consistent with other permits.

- The serial number for engine E002 was corrected in the table in Condition 6.1.

Sections II.2 – Engines E002 – E004

- Inserted “renewal” before the phrase “permit issuance” in the first sentence in Condition 2.1.3 to clarify the timing of the requirement.

Section II.4 – East and West Dehydrators (S006 and S007)

- Included the gas injection pump volume ratio in Condition 4.1.4 as an assumed value to be used in any GLYCalc run.

- Revised the references to the “Worst Case Dehydrator Emissions” in Conditions 4.2 and 4.3 to the underlying APEN which set these limits, which was the APEN submitted on 2/25/98.

Appendices

- Corrected the serial number for engine E002 in the tables in Appendices B and C.

Table 1: HAP Emissions as Calculated in Accordance with NGTS MACT Method

HAPS per CIG MACT analysis for S006, S007 and S008, with APCD corrections, higher engine hours

Includes requested changes to S006 and S007 in July 2008 mod

	HAP Emissions (tons/yr)									
Unit	acetaldehyde	acrolein	benzene	toluene	ethyl benzene	xylene	formaldehyde	n-hexane	methanol	**total**
E001	0.22	0.16	0.04	0.21		0.01	1.83	0.03	0.07	2.57
E002 - E004	0.43	0.40	0.94	0.30		0.07	4.23		0.47	6.84
E005	0.40	0.29	0.08	0.39		0.02	3.33	0.08	0.12	4.71
East Dehy (S006)			0.27	0.49				0.12		0.88
West Dehy (S007)			0.26	0.48				0.12		0.86
Central Dehy (S008)			3.75	5.14				1.54		10.43
Field Dehy (S009)			2.90	7.80	2.10	2.80		1.10		16.70
Fugitive VOCs			2.90E-04	6.84E-04	0.00E+01	3.94E-04		4.48E-03		5.85E-03
Total	1.05	0.85	8.24	14.81	2.10	2.90	9.39	2.99	0.66	43.00
S001/S009	0.22	0.16	2.94	8.01	2.10	2.81	1.83	1.13	0.07	19.27
Others	0.83	0.69	5.30	6.80	0.00	0.09	7.56	1.86	0.59	23.73

S001 and S009 are subject to Subpart HH, therefore, they are aggregated separately for purposes of determining MACT applicability.

The other emission units are potentially subject to Subpart HHH.

Engine emissions are based on most conservative emission factor (from AP-42 and HAPCalc 2.0, for 4-cycle rich burn engines and/or 4-cycle lean/clean burn) for each pollutant. Note that except for S001, these are basically the same emission factors used by CIG

APCD corrections on dehy runs for S006, S007, and S008 are based on lower inlet gas temp per recorded values (average) and non-electric pumps for S006 and S007. The July 1, 2008 modification requested a higher glycol circulation rate for both S006 and S007, this was included in the analysis. In addition, the GLYCalc run used the default gas pump ratio of 0.08 acfm gas/gpm glycol, the previous version used a ratio of 0.05

Fugitive VOC emission from equipment leaks are based on the information provided in a modification request submitted on March 22, 2007 (the 2007 component count, emission factors from EPA-453/R-95-017, “EPA’s Protocol for Equipment Leak Emission Estimates”, Table 2.4, November 1995), 8760 hrs/yr of operation and the March 2006 gas analysis). This information demonstrated that VOC emissions are below the APEN de minimis level (2 tons/yr), hence the previously issued construction permit was cancelled.

Table 2: Potential to Emit of HAPS

HAPS per Division Analysis

Unit	HAP Emissions (tons/yr)									
	acetaldehyde	acrolein	benezene	toluene	ethyl benzene	xylene	formaldehyde	n-hexane	methanol	**total**
E001	0.22	0.16	0.04	0.21		0.01	1.83	0.03	0.07	2.57
E002 - E004	0.43	0.40	0.94	0.30		0.07	4.23		0.47	6.84
E005	0.40	0.29	0.08	0.39		0.02	3.33	0.08	0.12	4.71
East Dehy (S006)			0.96	0.87	1.43	1.94		1.50		6.70
West Dehy (S007)			0.96	0.87	1.43	1.94		1.50		6.70
Central Dehy (S008)			6.03	1.95	1.40	1.30		1.06		11.74
Field Dehy (S009)			2.90	7.80	2.10	2.80		1.10		16.70
Fugitive VOCs			2.90E-04	6.84E-04	0.00E+01	3.94E-04		4.48E-03		5.85E-03
Total	1.05	0.85	11.91	12.39	6.36	8.08	9.39	5.27	0.66	55.97
S001/S009	0.22	0.16	2.94	8.01	2.10	2.81	1.83	1.13	0.07	19.27
Others	0.83	0.69	8.97	4.38	4.26	5.27	7.56	4.14	0.59	36.70

S001 and S009 are subject to Subpart HH, therefore, they are aggregated separately for purposes of determining MACT applicability.

The other emission units are potentially subject to Subpart HHH.

Engine emissions are based on most conservative emission factor (from AP-42 and HAPCalc 2.0, for 4-cycle rich burn engines and/or 4-cycle lean/clean burn) for each pollutant.

Dehy emissions from GLYCalc runs used to set permit limits. Note that July 1, 2008 mod requested increased in glycol circulation rate and increase in emissions. In addition, with the July 2008 mod, the GLYCalc runs were conducted with the gas pump at the default rate (0.08 acfm gas/gpm glycol). Previous runs used a lower gas pump ratio.

Fugitive VOC emissions are based on the information provided in a modification request submitted on March 22, 2007 (the 2007 component count, emission factors from EPA-453/R-95-017, “EPA’s Protocol for Equipment Leak Emission Estimates”, Table 2.4, November 1995), 8760 hrs/yr of operation and the March 2006 gas analysis). This information demonstrated that VOC emissions are below the APEN de minimis level (2 tons/yr), hence the previously issued construction permit was cancelled.